

REMARKS

To further prosecution of the instant application, Applicants have amended herein Claims 1 and 34. The amendments to Claims 1 and 34 do not add subject matter and have antecedent basis. Applicants respectfully request reconsideration.

In addition, Applicants have added herein new Claims 35-44. Claims currently pending in the instant application include Claims 1-6, 23-28, 31, and 33-44 with Claims 1, 34, and 35-38 in independent form.

Amendment of Specification

Applicants have amended herein the application specification at page 3, paragraph [0004] to include the federal registration symbol with the display of the trademark Kevlar in the application.

Claim Rejections Under 35 U.S.C. § 112

Claims 1-6, 23-28, 31, and 33-34 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. More specifically, the Examiner has indicated that the specification as originally filed does not disclose the outer topcoat layer comprised of a non-radiation curable thermoplastic hot melt, as specified in Claims 1 and 34. In addition, the Examiner indicates this language cannot be inferred from the application specification. Without acceding to the correctness of the Examiner's analysis and conclusion, Applicants have amended herein Claims 1 and 34 to delete the term "non-radiation curable." Applicants therefore respectfully request the Examiner withdraw the rejection of Claims 1-6, 23-28, 31, and 33-34 under § 112, first paragraph.

Patentability of Claims 1-6, 23-28, 31, and 33-35 In View of Prior Art References Previously Cited As Basis for Claim Rejections

The Examiner in the previous Office Action rejected Claims 1-6, 23-28, 31, and 33-34 under 35 U.S.C. § 103(a) as being unpatentable over U.S. 4,479,984 issued to Levy et al. ("Levy") in view of U.S. 5,700,417 issued to Fernyhough ("Fernyhough") and further in view of U.S. 6,249,629 issued to Bringuier ("Bringuier"). Applicants

respectfully submit that the claims as amended herein are patentable over the cited combination of prior art references because the combination of references does not disclose, teach, or suggest at least an outer topcoat as specified in independent Claims 1 and 34.

As amended, Claim 1 recites an outer topcoat layer substantially surrounding said matrix, said outer topcoat layer including a thermoplastic hot melt polybutylene terephthalate copolymer resin to impart specific bonding characteristics to said rod.

In contrast, Fernyhough discloses radiation-curable resin formulations for use in preparing fiber-reinforced composites and coatings, as well as for use as outer coatings of such composites. Specifically, Fernyhough discloses a process for impregnating reinforcing fibers with a radiation-curable composition comprising a polymerisable monomer and a polymer that is dissolved or dispersed in the monomer. Fernyhough further discloses such resin-impregnated fibers are exposed to UV, visible or EB radiation to cure the resin composition. (col. 1, lines 30-35). Fernyhough discloses the UV curable resin formulations are exposed to UV or visible light to induce photopolymerization of the formulations such that the monomer(s) reacts together and with the polymer(s) dissolved or dispersed therein. (col. 1, lines 65-66 and col. 5, lines 44-47 and lines 55-57). Fernyhough teaches such polymerizable monomers may include vinyl esters and such polymers may include poly (butylene) terephthalates and copolymers of ethylene with esters of acrylic or methacrylic acids (col. 2, line 18 and col. 3, lines 21-22 and 45-46, respectively). The resin formulations serve as a matrix for reinforcing-fibers and the same resin formulations may serve as an outer coating. Fernyhough specifically discloses at column 5, lines 14-19:

Optionally, a second arrangement of 'resin bath-die-lamp(s)' may be present in series, before wind-up, to complete composite manufacture and/or control the fibre-resin volume ratio and/or allow application of an outer coating. The same resin formulations may be used as an outer coating.

Applicants submit that the outer coating Fernyhough discloses includes the same UV curable resin formulations as the UV curable matrix formulations. Such resin

formulations are different from the outer topcoat layer specified in Claim 1 because the topcoat layer of Claim 1 is light stable and therefore is not light reactive or sensitive. In addition, Fernyhough discloses outer coatings that have different compositions from the composition of the outer topcoat layer specified in Claim 1. In these respects, Fernyhough teaches away from the invention of Claim 1.

More specifically, Fernyhough neither alone or in combination with the cited prior art references discloses, teaches, or suggests an outer topcoat layer including a thermoplastic hot melt polybutylene terephthalate copolymer resin because such copolymer is not chemically photosensitive or photoreactive. Rather, in contrast to Fernyhough, the specified thermoplastic hot melt polybutylene terephthalate copolymer is light stable and therefore is not capable of being induced to crosslink or polymerize via exposure to UV, visible or other radiation, as the Fernyhough resin formulations are. Each of polybutylene and terephthalate is a difunctional compound that reacts with the other compound of this copolymer in a linear fashion, such that the resulting copolymer cannot be crosslinked or polymerized via photopolymerization. The application specification discloses at page 10, paragraph [0029], the thermoplastic hot melt topcoat layer is applied to the fiber members encased in the UV curable matrix after such matrix is cured, and then pulled through a cooling bath.

The resin formulations that Fernyhough discloses may be used for an outer coating are limited exclusively to the UV or light curable resin formulations that serve as the reinforcing fiber matrix. Fernyhough therefore teaches away from the outer topcoat layer specified in Claim 1 because the claimed topcoat layer includes a specific copolymer resin that is light stable and is not light reactive or sensitive and therefore cannot be induced to crosslink or polymerize by exposure to UV or visible radiation.

In addition, the thermoplastic hot melt polybutylene terephthalate copolymer resin outer topcoat of Claim 1 includes a different chemical composition from the resin formulations Fernyhough discloses for the UV curable matrix and outer coating.

Further, the outer topcoat layer specified in Claim 1 is a separate and distinct outer layer from the UV curable resin matrix that encases the fiber members, while the outer coating Fernyhough discloses includes the same or similar UV curable resin formulations as the UV curable matrix within which the reinforcing fibers are dispersed.

Fernyhough essentially discloses two layers of the same or similar UV curable resin formulations. The UV curable vinyl ester resin matrix and the thermoplastic hot melt polybutylene terephthalate copolymer resin topcoat layer that are specified in Claim 1 are different physically and chemically from each other.

Thus, Fernyhough alone or in combination with Levy and Bringuier does not disclose, teach, or suggest the limitation to said outer topcoat layer including a thermoplastic hot melt polybutylene terephthalate copolymer resin to impart specific bonding characteristics to said rod. Rather, Fernyhough teaches away from the claimed thermoplastic hot melt polybutylene terephthalate copolymer resin and discloses exclusively UV curable resin formulations for a reinforcing fiber matrix and for an outer coating. In addition, Fernyhough does not provide a teaching, suggestion, or motivation that would cause one of ordinary skill in the art to combine the teachings of Fernyhough with Levy and Bringuier to thereby surround a plurality of fiber members encased in a UV curable matrix with a thermoplastic hot melt polybutylene terephthalate copolymer resin, as specified in Claim 1. The only nexus for combining the teachings of Fernyhough with Levy and Bringuier is the specification of the instant application. Therefore, one of ordinary skill in the art would not be motivated to combine the teachings of Fernyhough to modify the combination of Levy and Bringuier. Further, as discussed above, combining the teachings of Fernyhough with Levy and Bringuier would not achieve the invention of Claim 1. Claim 1 therefore is not obvious in view of the cited combination of prior art references.

With respect to Claim 34, for the reasons given above with respect to Claim 1, Claim 34 is not obvious in view of the cited combination of prior references.

As amended, Claim 34 recites an outer topcoat layer including an outer topcoat layer substantially surround said matrix, said outer topcoat layer including a thermoplastic hot melt ethylene acrylic acid copolymer resin to impart specific bonding characteristics to said rod.

The claimed thermoplastic hot melt ethylene acrylic acid copolymer is not obvious in view of Fernyhough alone or in combination with Levy and Bringuier.

The ethylene and acrylic acid compounds of the thermoplastic hot melt copolymer resin are difunctional compounds, such that, when the double bonds of each compound are broken, the compounds can only react to one another. The resulting ethylene acrylate copolymer resin is not chemically photosensitive or photoreactive and therefore cannot be induced to crosslink or polymerize by exposure to UV, visible or other radiation. Therefore, in contrast to the UV curable resin formulations that Fernyhough discloses may be used as outer coatings of the reinforcing fiber matrix, the resulting thermoplastic hot melt ethylene acrylic acid copolymer resin of Claim 34 is light stable.

In addition, the outer topcoat layer specified in Claim 34 is a separate and different outer layer from the UV curable resin matrix that encases the fiber members, while the outer coating Fernyhough discloses includes the same or similar UV curable resin formulations as the UV curable matrix in which the reinforcing fibers are dispersed. Fernyhough essentially discloses two layers of the same or similar UV curable resin formulations. In contrast, the UV curable vinyl ester resin matrix and the thermoplastic hot melt ethylene acrylic acid copolymer resin topcoat layer that are specified in Claim 34 are different physically and chemically from one another.

Thus, Fernyhough alone or in combination with Levy and Bringuier does not disclose, teach, or suggest the limitation to said outer topcoat layer including a thermoplastic hot melt ethylene acrylic acid copolymer resin to impart specific bonding characteristics to said rod. Rather, Fernyhough teaches away from the claimed thermoplastic hot melt ethylene acrylic acid copolymer resin and discloses exclusively UV curable resin formulations for a reinforcing fiber matrix and for an outer coating. In addition, Fernyhough does not provide a teaching, suggestion, or motivation that would cause one of ordinary skill in the art to combine the teachings of Fernyhough with Levy and Bringuier to thereby surround a plurality of fiber members encased in a UV curable matrix with a thermoplastic hot melt ethylene acrylic acid copolymer resin, as specified in Claim 34. The only nexus for combining the teachings of Fernyhough with Levy and Bringuier is the specification of the instant application. Therefore, one of ordinary skill in the art would not be motivated to combine the teachings of Fernyhough to modify the combination of Levy and Bringuier. Further, as discussed above, combining the teachings of Fernyhough with Levy and Bringuier would not achieve the invention of

Claim 34. Claim 34 therefore is not obvious in view of the cited combination of prior art references.

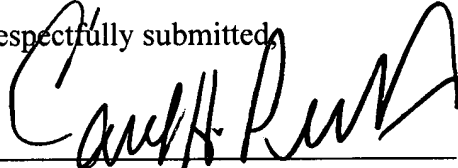
Claims 2-6, 23-28, and 31 depend from Claim 1 and are patentable over the cited combination of prior art references for at least the reasons given above.

Patentability of New Claims 35-44

With respect to new independent Claims 35-38 and new dependent Claims 39-44, Applicants respectfully submit Claims 35-38 and 39-45 are patentable over the cited combination of prior art references for at least the reasons give above with respect to Claims 1 and 34.

Based upon the foregoing amendments and discussion, the instant application is in condition for allowance and Applicants respectfully request a notice to this effect. Should the Examiner have any questions concerning this response, Applicants invite the Examiner to telephone the undersigned.

Respectfully submitted,



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